

with sincere regards

5 of Wm H Pancoast.

THE CAROLINA TWINS.

BY

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Orion & Thompson
Phil^a

Double headed Girl.



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OF

MEDICINE AND SURGERY.

The Carolina Twins.

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Species 1st.—Pygopagus symmetros.

Derivation.—*πυγή*, the nates, *παγω*, I fasten. *συν*, with, *μετρεῖν*, to measure.

Definition.—Two individuals more or less complete, separated as low as the pelvis, by the lateral or posterior portions of which they are united; genitals double. In the higher degrees there are two umbilical cords, which are normally attached respectively to each abdomen. Vital organs independent in the type.

Genus 1st.—Pygopagus.

Order 1st.—Terata catadidyma.

Derivation.—*τερας*, *τερατος*, a monster; *κατα*, down, *διδυμος*, a twin.

Definition.—Duplicity, with more or less separation of the cerebro-spinal axis, from above downwards, under the general head of diploteratology or diploterography, the description and diagnosis of special forms of double monsters.

Under this heading, as the proper place in the classification of a compound monster of duplex development, as so admirably set forth in the excellent article by Dr. G. I. Fisher, of Sing Sing, New York, in the Transactions of the State Medical Society of New York, I would report my observations upon the "Carolina twins," or the "double-headed girl," as they have been called.

This case of pygopagus symmetros came under my professional care, January 18, 1871, while it was on exhibition in this city, in consequence of an abscess forming near the genitals, as stated by Mrs. Smith, who is the guardian of the twins. In the course of their treatment, I was enabled to make the follow-

ing observations and to have them confirmed by my medical friends whom I had the opportunity of inviting to be present. After great persuasion and with the kind assistance of my friend Dr. F. F. Maury (owing to the modesty of the twins and the natural reluctance of Mrs. Smith), the accompanying photograph of them was taken. They clung to their raiment closely, as may be seen, and it was only by earnest entreaty that they were willing to compromise by retaining the drapery as photographed. The expression of their countenances shows their displeasure, as their features ordinarily express great amiability of character. This living example of *pygopagus symmetros* is named Millie and Chrissie Smith. They are negresses, twenty years of age, born of slave parents in Columbus County, North Carolina, July 11, 1851. The parents are still living. The mother is now forty-nine years old and the father fifty-five years. They have had fourteen children, the twins being the ninth birth. The mother can assign no cause for the monstrosity, nor did she ever see the Siamese twins. Dr. P. C. Gooch, in *The Stethoscope* of July, 1852, describes the mother as a very stout negress of thirty-two years of age, very fat and of a large frame and pelvis. Her labor in this case, he says, "was brief and easy. The larger twin was born first by a stomach presentation, and the second came by the breech. The children were noted as being remarkably healthy and sprightly, perfectly formed, and united at the sacra. The band of union seems to be chiefly cartilaginous, but the sacra are so closely approximated that some suppose there is osseous union of them." Dr. Gooch further says that when he first saw them "the elder one was in a tranquil sleep, but it was awakened by the action of the bowels, of the younger and smaller sister, who was then suffering from diarrhœa. When one has an evacuation of the bowels, they both strain." When I was called to see the twins, I found them very intelligent and agreeable, standing about four feet six inches in height, and so closely united that they were clothed in one dress large enough for them both, with sleeves for the four arms and a silken sash tied around their common waist. The frontal development of each was remarkably good, and though their complexion was of the dusky brown of the American negro, and their noses and lips possessed the characteristics

of their race, yet the expression of their faces was so amiable and intelligent, and their manners so well bred, that they produced a most pleasing impression upon me. They sing duets and play upon the guitar very pleasantly, their voices being quite melodious. Though joined at the inferior posterior parts of their bodies by the contiguous sacra, and originally formed so as to be placed back to back, yet they have from their birth instinctively twisted themselves, as if the bond of union had yielded, and their spines have assumed a gibbous form under the exertion, permitting them to assume almost a lateral position, like an expanded V, thus facilitating their movements. They walk each partly sideways, the apex of the V advancing, their main support being from the outer limbs, steadied and guided by the weaker inside legs. Their movements are very graceful, and all the curves of their bodies yield harmoniously to their gliding step, as they walk to and fro, run with swiftness, or dance the schottische, polka, or waltz.

They can either walk easily or stand upon the outer limbs, holding up the inside ones, using the outer limbs as in the case of a single individual. In walking and running they rest upon the outer limbs as they simultaneously swing forward the inner ones, and then, standing on the inner ones, swing forward the outer ones. Owing to the obliquity of the junction, the inner limbs are somewhat shorter than the outer ones, and as they move, they step upon the ball and toes of the inner limbs, which adds much to the elasticity of their step. As they stand fronting me, Millie is on my left hand, and Chrissie on my right. Chrissie is larger and more developed than Millie, who was quite weakly as a child, but is now strong and hearty, owing to the support she has received from her connection with her more robust sister. Chrissie can now, as she has always been able to do, bend over and lift up Millie by the bond of union. This she was in the habit of doing as a part of the exhibition, but as Millie is now so strong and well developed, I advised them to avoid it as a practice, so as not to injure Chrissie's health. Millie, though the weaker physically, has the stronger will, and is the dominating spirit, usually controlling their joint movements, though from long habit one instinctively yields to the other's movements, thus preserving the necessary harmony.

Mrs. Smith tells me that when they were little it was somewhat difficult for them to understand this, and individual desires sometimes led to little struggles and quarrels for supremacy. I noticed that what required only the exertions of one to perform, one alone did, as shutting the door or taking something from the mantel or table. But when their single plate was placed upon their dinner-table, then each used both hands to carry the viands to their respective mouths for transmission through each œsophagus to their separate stomachs, with evident satisfaction to each individual. Each brain acts separately, there are two intelligences, as shown by their conversing with each other, and they can carry on independent trains of thought, as is obvious from their talking at the same time with different persons upon different subjects. In consequence of habit, their functions generally work simultaneously. They are usually hungry at the same time, and generally desire the same food and drink, both drinking a great deal of water. Their habits are very much alike. They generally sleep and wake at nearly the same moment, though one can sleep independently of the other, and sometimes one turns over the other one in bed without awaking her. They defecate and urinate at the same time, though one may have a diarrhœa without the other suffering any pain, or one may be bilious without the other being so, as I found Millie so suffering on one occasion, while Chrissie was not. I ordered Millie a cathartic pill, thinking that she alone required it, but I was told that each had been given one, with the best effect, and I found Millie relieved of her headache.

I believe Millie could be sick at her stomach without Chrissie being so, and *vice versa*. It is reported that one suffered more in teething than the other, and that Millie had the diphtheria, but not Chrissie, and that they both had fever and ague at the same time. They menstruate regularly and naturally at the same time, and have done so since they were thirteen years old, there being no more blood on the napkin than is natural to a female of their age. Chrissie, on their left, is a little taller, stronger, and more robust than Millie, on their right. As far as can be recognized, there is no transposition of viscera. The hearts are nearly in their respective places, and, allowing for the curvature of their spines, there is but the slightest deviation of

the respective apices to the median line. The heart and lung sounds are normal. The individuality of each twin was again shown on examining the pulse. On several occasions, Millie's pulse was found to be from ten to twelve beats quicker than Chrissie's. At one time Millie's pulse was ninety-six beats and Chrissie's eighty-four; on another occasion, Millie's was eighty while Chrissie's was sixty-eight.

When called to examine the so-called abscess, I caused them



to lie down upon the bed. In lying upon their backs, Chrissie was upon my right and Millie on my left, both limbs on each side drawn up. They lifted up the inside limbs as far as they could, but I was obliged to push them gently up still farther. I found only one vulva, deeply placed between the four limbs.

The above wood-cut, drawn by the artist, Mr. Faber, from my

description, represents the appearance they presented. Each lying upon her side, it shows how each vulva, commencing at the mons and running back between the limbs, meets the opposite vulva, thus making a common vulva joined at the fourchette. There is neither posterior commissure nor fossa navicularis. Hence only one vagina, on each side of which, at the right and left margin, juts out the meatus urinarius proper to each individual, then the vestibule between each meatus and clitoris. There are two urethræ, two vestibuli, two clitorides, two nymphæ, and two labiæ majoræ. The labiæ majoræ are continuous with each other. The vulva, as they lie, appears, as it were, crosswise, owing to their position, the limbs being firmly flexed upon each abdomen. About $\frac{1}{2}$ inch below the middle of this common vulva is found the common anus, and in the same median line, and in a depression simulating the appearance of an imperfect anus, about $2\frac{1}{2}$ inches above the vulva, was a fistulous opening which I had been called to see as an abscess. This had been annoying them for some months, occasionally closing up, then inflaming, opening, and discharging matter. Into this I could readily pass a good-sized probe; and I found it to lead upwards and backwards and inwards, as they lay, for some $3\frac{1}{2}$ inches. On withdrawing the probe, which gave but very little pain, I noticed a marked fecal odor in the discharge upon it, although there was no odor perceptible otherwise. This sinus I concluded to be an opening into the common bowel, and judged it to be the result of an abortive effort of nature to make a second anus and rectum. On examining the vagina, which gave them more annoyance than pain, I found no hymen present, but the orifice naturally small and contracted, as that of an ordinary young unmarried woman. I readily passed my index finger up its whole length. I found only one vagina, and no bifurcation of it, only one womb, with an unusually long neck, around which the finger could be readily passed until it pressed against the *cul-de-sac* of the vagina, where I could still feel the body of the womb, but no apparent subdivision, though two distinct wombs might have coalesced above by their respective fundi. Dr. F. H. Ramsbotham, who examined them when five years old, in his report says: "There are two vaginae, and without doubt two uteri" (Fisher); but there is now only one

vagina; and the gentlemen who examined the twins with myself could clearly recognize only one uterus in the common vagina. The vulva, on each side, begins underneath at some little distance behind the symphysis pubis. Each symphysis is natural, and separated from the other by the width of the two bodies between the thighs. I passed a metallic female catheter into each urethra, and could distinctly recognize a partition between the two bladders. I passed then two metallic catheters, one into each bladder; they did not touch each other, but pressed against the dividing partition.

On passing my finger into the rectum, I could not reach the point of bifurcation, nor feel the probe distinctly that I had passed into the sinus, but I could recognize perfectly the apex of a coccyx, thicker and stronger than natural, as if formed by the junction above of two, and on the lower side of the joined pelvis as they lay. There were four ischial tuberosities, two for each side, and in nearly their proper relations to the respective trochanters, but opposed somewhat obliquely, as can be readily understood from the twisting of the spinal columns above referred to. The band of union, as shown in the photograph, I measured, and found it to be 26 inches in circumference. At five years of age, according to Dr. F. H. Ramsbotham, it was 16 inches in circumference. The distance between the top of the crest of the one ilium to the other, at its greatest breadth on the back, was $14\frac{1}{2}$ inches. There were two umbilici. To establish the accuracy of my examination, I invited upon one occasion Prof. Pancoast, Prof. Gross, Dr. Seavy, of Bangor, Maine, and Dr. T. H. Andrews; and upon another, Dr. R. J. Levis and Dr. S. H. Dickson, Jr. These gentlemen agreed with me that there was but one vagina, but one womb to be recognized, but one perfect anus, and that the parts are as I have described them. We also decided that the fistula communicated with the bowel; that the respective recti united at some point above, out of the reach of digital exploration; that the osseous junction was by the union of the sacra and coccyges; and also that the caudæ equinæ of each spinal cord were more or less united. For on touching the left leg of Millie, the sensation and number of touches are recognized by Chrissie, but not

the spot; and on touching the right leg of Chrissie similar effects are produced.

In company with Dr. J. Murray Barton, I applied an æsthesiometer on the inside of the leg, first of Chrissie, and then of Millie, and found the limit of tactile recognition to be about $2\frac{1}{2}$ inches. On the 8th of March last I invited Dr. Wm. Pepper and Dr. R. M. Townsend to accompany me in my visit. We placed the pole of a Faradaic current in the hand of Millie, another on the outside of the outer limb of Chrissie. They both felt it. On placing one pole in Chrissie's left hand, and the other on the external popliteal nerve of Millie's outer leg, the current produced powerful contractions of the peronei muscles of Millie's limb. Chrissie also felt the current in her left arm. When one pole was placed on the external popliteal nerve of Millie's outside leg, and the other pole applied at the same point on Chrissie's outside leg, powerful contractions were simultaneously made by the peronei muscles of both outer limbs. The sensation was recognized from the points of application down to the ends of each one's toes. When the poles were applied to the middle line of the connecting band and the external popliteal nerve of Millie's outer leg, both felt the current, Chrissie feeling the current in Millie's leg, Millie's muscles contracting powerfully.

One pole being applied on each dorsal region, the current is at once recognized by both. One pole placed over Chrissie's dorsal region, another over the patellar plexus of Millie's outer leg, a current is established that they both feel, and powerful contractions of the muscles of Millie's thigh are produced. We asked, one at a time, to try to lift up the leg or legs of the other, but this neither one could do; each one having complete control, however, over the limbs belonging to her trunk. I applied the point of a lead-pencil to the top of the band of union at the exact middle line, and each recognized the sensation; but removing the point on either side less than an inch, only the one touched recognized the sensation.

It is an interesting feature in this case, that it presents many points of similarity to that of the Hungarian sisters, born October 26, 1701, and that there is no similar case reported reaching adult life for one hundred and seventy years. The Hungarian

sisters were similarly united, a symmetrical pygopagus. A description of them is found in the *Philosophical Transactions*, vol. 1. page 311 (Torkos). On referring to it, we find that Helen, the stronger twin, was first delivered as far as the navel, Judith following in a reverse order. Dr. P. C. Gooch reports that the larger child of the Carolina twins (Chrissie) was born first by a stomach presentation, and the smaller (Millie) came by the breech. Judith, from an attack of paralysis, in her sixth year was much weaker than Helen. So Millie was much weaker than Chrissie in her childhood, but has increased and grown stronger since.

Menstruation with the Hungarian sisters occurred at the age of sixteen years, was continued regularly, although one was unwell a week sooner than the other. The Carolina twins also menstruate regularly, and at the same time, as I am informed. With the Hungarians one suffered from a slight indisposition independent of the other; it is the same with the Carolina twins. The Hungarians were intelligent; so are the Carolina twins. The Hungarians could not walk side by side; when one went forwards, the other went backwards. When one stopped, she raised her sister off from the ground, which Helen often performed, being the stronger. They had no sensibility in common, except in the immediate vicinity of the line of junction. Millie and Chrissie cannot place themselves accurately side by side; there is a marked obliquity of position, for originally they were placed back to back.

Chrissie, being the stronger, can readily lift up Millie on her back by the band of union. The sensibility is only common at the line of junction, or very near it, and in the two inner lower extremities. The vulva in both these cases is common to each twin, and hidden inferiorly between the four thighs. The urinary organs are separate in each case. The vagina bifurcated in the Hungarians; not so in the Carolina twins,—one womb only can be recognized in the latter. I cannot find mention of this point in the Hungarians, but, as there were two vaginæ, I presume there were two wombs. One rectum in each case. The desire to defecate is simultaneous in both cases. But with the Hungarians it was not so with the inclination to urinate. They would even dispute about it sometimes, though generally

amiable to each other. The Carolina twins micturate simultaneously, it is reported; but I believe that the consentaneous micturition and defecation are the result of habit. For in the case of the Ischiopagus Tripus Asymmetros, Minnie and Mina, now on exhibition here, aged four months, having a common genitalia and anus, each one defecates separately, as can be seen by the reddening of the face and the straining of the abdominal muscles of one while the other is tranquil. In each case the temperaments are decidedly different, and the mental functions and nervous systems seem to be quite independent. In the case of the Hungarian sisters, one often slept while the other was awake; they were affected differently by hunger; one could read and write while the other was asleep. So also is it with the Carolina twins. The osseous union of the Hungarians was from the second vertebral elements of the sacra to the end of the coccyges. The union is similar in the Carolina twins. In the case of the two Hungarians, the aortæ anastomosed inferiorly at the point where the iliacs were given off. The ascending venæ cavæ were connected correspondingly, thus establishing a large and direct communication between the two hearts, producing, of course, a great community of life and functions. So I believe it to be with the Carolina twins, and in each case there are two separate hearts.

Thus we find a great similarity in the organization, both physical and mental, of these two cases of remarkable twins. The Hungarians lived to the age of twenty-one years, and as in their case it was considered impossible to separate them with safety, so I believe it to be with these (Millie and Chrissie); and as the Carolina twins are united in life, so I believe they will be in death, and that the analogy to the Hungarian sisters will be carried out to the last. The union, arterial and nervous, is so intimate, that if either Millie or Chrissie shall die first, the other will succumb almost at the same moment, either from the impression upon the circulation or upon the nervous system. So was it with the Hungarian sisters. Judith died from an affection of the brain and lungs. Helen, who had previously enjoyed good health, was taken ill with a slight fever, soon after her sister's indisposition, and suddenly sank into a state of collapse, yet preserving her mental faculties; after a short struggle she

became the victim of the malady of her sister, both expiring almost at the same moment.

Eccardus (*de Sororibus Gemellis cohærint*, 1709), among other questions in regard to the Hungarian sisters, discusses whether their condition would admit of or justify the solemn rite of matrimony. He answers that physically there are no serious objections, but morally there are insuperable ones, more particularly on account of the extreme liability of propagating monsters. I agree with him, in reference to the Carolina twins, that physically there are no serious objections, but that morally there are insuperable ones; but I do not believe with him that such marital union would necessarily produce monsters.

The most interesting point in the consideration of these cases of duplex formations is, perhaps, in reference to their embryogeny. Where there is simply an outgrowth of some 'super-numerary' part, or even where there is a secondary body more or less complete, but only one intelligence, the development of the monster might very readily be explained by some one of the various theories that have been suggested by different writers upon Teratology. The most plausible theories are, that these duplex existences are due either to the accidental fusion of two embryos at some early period of their development, or to the existence of a double yolk, or to the proximity and relative position of the neural axes of two more or less complete primitive traces, developed in the vitelline membrane of a single ovum, as suggested by Dr. G. J. Fisher, or to a hypertrophic power or process of budding, or to the fissuration of the cerebro-spinal axis at an early period of foetal life, as suggested by Dr. H. R. Storer. We must first, I think, explain the development of these duplex formations before we can again discuss the question whether the quality of monstrosity be original to the ovum or acquired by it. This discussion was carried on from 1724 to 1743, Messrs. Lémery and Winslow being the principal champions, and was only terminated by the death of Lémery.

A double formation, from the head downwards, or from the coccyx upwards, might be well explained by Dr. H. R. Storer's theory of the fissuration of the cerebro-spinal axis, or by a fissuration of the primitive trace or groove, provided the duplex

existence has not two brains or two intelligences. In Freyling's case of the two united females (symmetrical pygopagus) born in Carinola, Italy, A.D. 1700, and who died at the age of four months, after being separated, there were two intelligences. On the other hand, in the case of George Washington —, when the supernumerary body was cut from the cheek with the écraseur by Professor Pancoast, no intelligence died out. George Washington — lived, and is living now. Here was one perfect cerebro-spinal system, in one complete body, united to an incomplete cerebro-spinal system in the imperfect body. The connection of the incomplete body with the complete was such that great fears were entertained lest the child, only seven months old, should succumb to the operation. In assisting in giving ether, I was ordered to cease administering it, lest the child should die; for here there was only one intelligence; there was none in the supernumerary body.

The theory of fissuration, or that of the fusion of two primitive traces, might well account for the development of this case (cephalopagus prosopodidymus), as they explain the hypertrophy, or in a case of a single entity; but they do not seem to account for the existence of two entities, which would appear to involve the idea of two original germs. If the two primitive grooves represent two entities, then how are these two grooves developed? For any doctrine to explain satisfactorily these duplex formations ought to account for the highest as well as the lowest grades of union. Neither of these two theories would explain the development of the Carinola twins, the Hungarian sisters, the Siamese twins, the Carolina twins, or the case of Ischiopagus Tripus, Mina and Minnie, or any of the duplex formations possessing two intelligences, unless they can account for the development of the two intelligences. In conversation with the Siamese twins, with the Carolina twins, and in Mina and Minnie, I recognized two distinct intelligences. It is difficult to avoid the conclusion that such cases are due to the development of two entities at the earliest stage of embryogenesis, whether by the ordinary manner of fecundation of the spermatozoa, or by a double-headed spermatozoon, the existence of which Dr. H. R. Storer says was demonstrated to him by Professor Salisbury, of Cleveland,

Ohio. If the bicephalous spermatozoon be proved to exist ordinarily, it would be yet difficult to understand how it could impress the germinal vesicle in a manner to produce these duplex formations, although we know that the sperm cell makes a great impression upon the germinal vesicle. It might, possibly, have as much power in determining the sex and peculiarities of the embryo as the ovum itself, for we know that characteristics of the father are transmitted. But to effect the doubling of the embryo, and the formation of two primitive grooves, it would seem as if it should have the power of splitting the germinal cell in two, or that the germinal cell must possess the power of doubling itself, or that there should be two germinal cells or vesicles to be fecundated.

With the existence of two intelligences there exist, also, two entities, each one, it would seem probable, due to the development of a corresponding germinal vesicle, fecundated at the same time, or one soon after the other. That two or more ova can be impregnated about the same time in the human female we know, as in the case of twins or triplets. In the inferior animals—those that produce litters—we have several ova fecundated at the same connection, and each is produced perfect, as each ovum is kept separate from the other; but let any two fuse during any stage of their development, and we may have a duplex formation more or less complete. The law of homologous union which controls these duplex organizations, making them of the same sex, joined together at the same parts, bone to bone, organ to organ, blood-vessel to blood-vessel, is no argument against the fusion of two germinal cells; it only insists upon the explanation of this law.

There is no question but that the union of the entities composing these highest duplex organizations has taken place at a very early period of embryonic life. In examining the reports of such cases, not always minutely given, or of double monsters of any variety, there is not a single instance that I know of where there has been found a separate bag of waters for each individual composing the double monster, such as is almost always the case, I believe, with ordinary twins. Cazeaux says (p. 866, Tarnier's edition) there are never two envelopes (amniotic) for a double monster. They have been reported with two

umbilical cords and two separate placentas, and with a single cord and single umbilicus and single placenta. Admitting the fact that the double monster has but a single chorion and a single amnion, it would seem, if we ventured upon the consideration of its development, to be necessary to consider the formation of these membranes and how there exists but these single ones.

They are found in the ovum itself. The chorion, the most important of the two for us to consider in this relation, and which ultimately does so much to form the placenta, is gradually developed out of the external wall of the fecundated ovum (the vitelline membrane), within which is the vitellus or yolk containing the germinal vesicle (*vesicula germinativa*), and the yolk itself (Bischoff) is converted into a secondary vesicle, the blastodermic membrane, within the substance of which, about the tenth day, appears the rudimentary embryo.

The presence of spermatozoa, singly or in numbers, has been recognized so frequently in the interior of the ovum (Meissner, Wagner, Heal, Robin,—Cazeaux, Tarnier, p. 122) that, at least, the occasional entrance of a spermatozoon must be allowed even before the ovum may have entirely left its ovarian birthplace. The spermatozoon itself, developed in a cell in the spermatid (semiferous) tubules of the male, is here found to enter again into a cell, the ovum of the female. With its entrance the germinal spot disappears (Bischoff), and the spermatozoon, according to Tarnier, undergoes a retrograde metamorphosis, and is resolved into granulations, which are mingled with the vitellus or yolk. This vitellus or yolk is now, as we may consider, endowed with unusual power; it quickly arranges itself into a granular layer, lining the inner surface of the wall of the cell or elementary chorion, and quickly develops into the germinal membrane, in the substance of which begins the formation of the new being.

Wagner (Cazeaux, Tarnier's edition, p. 92) has sometimes met with two or even more germinal spots in the ova of the mammifera. Though the fact must necessarily be more difficult to detect in the human race, from the less frequent opportunities for examination, there cannot be sufficient grounds for denying the great probability of their existence in woman. If

there exist two germinal spots or two germinal vesicles in one ovum (as can be illustrated by drawing two nucleated germinal vesicles, in the ordinary wood-cut, representing an ovum in a Graafian follicle, as figured in the text-books), we can readily admit that the spermatozoa, which enter in numbers, might effect a double conception in a single ovum, even if the existence of a bicephalous spermatozoon be not proved, and that there consequently would be but a single chorion and a single bag of waters. With this condition of development one could also understand that with a single chorion there might be one or two umbilical cords, and a single or double placenta, and yet, further, that the two embryos, formed from two germinal vesicles and developed on the same blastodermic membrane, could be united more or less completely, by a more or less adhesive junction or fusion of the two embryonic primitive grooves.

If we admit the possible fusion of two germinal vesicles, it does not seem improbable, also, that two or more fecundated ova may occasionally so coalesce as to cause a fusion of their membranes, and the union more or less complete of the corresponding primitive grooves. If this prove to be correct, we may then account, possibly, for the least complete union of the highest duplex organizations, as in the case of the Siamese Twins, Carolina Twins, Hungarian Twins, or in the closer union of Mina and Minnie, for a double body, with one umbilical cord and one placenta, or having two cords and two placentæ. At the same time, the existence of separate intelligences is recognized and explained, as the result of the fecundation and development of separate germinal vesicles.

For the lowest duplex organizations, with but one intelligence, we have only to admit, that if by the fusion of two germinal cells some one part is diminished, or is wanting in common, that it only requires a greater fusion of them to destroy a greater portion.

